MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2015/2016

MVR2033 – SIMULATION TECHNOLOGY

(All sections / Groups)

16 OCTOBER 2015
3.00 p.m - 5.00 p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages with 5 Questions only.

2. Answer **FOUR** out of FIVE questions . All questions carry equal marks and the distribution of the marks for each question is given .

3. Please print all your answers in the Answer Booklet provided.

Answer **FOUR** out of FIVE questions

QUESTION 1

Scenario 01- You are designing a simulator for a panic situation. Write down 2 objectives for this simulator system. It is a physical product, where user will need to be placed in there and experience the panic situation for achieving a certain objectives. Plan a series of activity for the user, and draw a diagram for this simulator layout. Label the diagram, mentioning where the main activity occur, the type of facility and devices required, the kind of interaction the system provide and the location for the micro-controller like Arduino or Raspberry Pi for controlling this simulation.
The question is about the planning of a simulator for a panic situation, therefore please address the 'panic' issue in your answer.

Question 01 a) List down 2 objectives for this 'panic' simulator. List activities required for achieving the system objectives. (6 marks)

Question 01 b) Draw the diagram for this simulator layout. Explain and label. Describe the sequence of events for this 'panic' simulator on the diagram itself. (4 marks)

QUESTION 2

Scenario 02 - Based on s4a scratch for Arduino, you will design an interactive system that integrates Arduino and Scratch. Scratch s4a is an easy way to code and integrate visual to display the sensor value. This sensor value can be utilized for driving graphics inside s4a scratch.
You are developing a system for a basic controller consists of a potentiometer (a sweeping knob that change a value from 0 to 100), a button (that switch on and off (1 and 0) and 2 Leds (green and red). Be creative and design a system that use this 4 items and plan the visuals for this system.

S4a Scratch menu (Figure)

Question 02 a) What is the steps for integrating Arduino with s4a scratch. How do you prepare the microcontroller. Which software do you need, and how do you prepare them. Draw a diagram showing your layout for the Arduino wiring for this application.
(5 marks)

Question 02 b) Write a concept for using this 4 items for your interactive system. This could be a simple game, educational program or instructional content. Draw the block for this interaction. (5 marks)

Continued .....

QUESTION 3

Scenario 03 – You are developing a glove as an interface for a Virtual Reality environment. This glove need to be worn by the VR simulation user during the simulation to achieve certain functions or effects. This glove need to be integrated with Arduino for sensing a sensor data or sending data to control servo motors.

Question 03 a) Write a working concept for this device. How does it work, what does it do, how does user use it, how the system interact and how user control or be controlled by the Glove. (3 marks)

Question 03 b) Draw the glove, and label them. Describe its function, mechanism and the control features. Relate this to the visual you are creating in Unity3D. (7 marks)

QUESTION 4

Scenario 04 - Design an Arduino system for a bicycle, which you are developing for a training simulator for adults who has never been on a bicycle previously. This system will be placed inside a lab with a projection on screen. This bicycle will be placed on a platform, where it is expected to yaw, pitch and roll to a certain degrees. There must be some assistive features to help this beginner to start cycling.

Question 04 a) Draw the storyboard for this training simulation highlighting on the issues related the standard operational procedure (SOP) for a safe cycling. For example, getting ready to ride would start wearing the right cloth and shoe.
Draw 4 to 6 set of images to demonstrate one level or a section of this bicycle. (6 marks)

Question 04 b) Explain the integration of sensor and Arduino by referring to your storyboard in 4a. This could be a servo-motor driving something, a sensor for detecting an element which relate to a control features or counting mistakes and errors. (4 marks)

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QUESTION 5

Scenario 05 – You are designing a Google DODOCase Virtual Reality simulation. There must be a significant reason for using this technology compared to other available technology.

Question 05 a) Write a short statement about your DODOCase project. And mention one objective ONLY. Then, draw a table like below and compare DODOCase advantages, disadvantages, technical differences with 2 other visualization devices (5 marks)
Project Title –
Short statement about your idea/project-
One objective –

Choose two(2), device 1 and device 2 for the three tables. Use similar device1 and device2 to complete Table1, Table2 and Table3

Table 1 Advantages for using DODOCase for your project

Type of device	DoDOCase	Other device1	Other device2
Advantage1			
Advantage2			

Table 2 DisAdvantages for using DODOCase for your project

Type of device	DoDOCase	Other device1	Other device2
DisAdvantage1			
DisAdvantage2			

Table 3 Technology differences between DODOCase compared to device1 and device2

Type of device	DoDOCase	Other device1	Other device2
Advantage1			
Advantage2			

Question 05b) Explain briefly the process for integrating DODOCase as your visual display with Unity3D. (5 marks)

End of Paper.